

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. **(currently amended):** A process for producing biodiesel fuel using triglyceride-rich oleaginous seed directly in a transesterification reaction in the presence of an alkaline alkoxide catalyst, wherein the said-process comprises the following steps:

- a) sieving and drying triglyceride-rich oleaginous seed;
- b) adding the oleaginous seed of step a) to a reactor;
- c) providing an anhydrous alkyl alcohol and adding the anhydrous alkyl alcohol to the reactor of step b), wherein the amount of oleaginous seed to anhydrous alkyl alcohol is from 4:1 to 0.5:1, based on the amount of oil contained in the seed of step b);
- d) commuting in the reactor the oleaginous seed and anhydrous alkyl alcohol of step c) After processing and drying a feed of oleaginous seeds, preparing in a reactor an homogeneous suspension of oleaginous seeds and an anhydrous alcohol in an amount of 4:1 to 0.5:1, at ambient temperature, so as to obtain a homogenous suspension; a emulsion;
- e) Adding an alkaline alkoxide catalyst to the homogenous suspension obtained in step d) emulsion obtained in a), wherein the amount of catalyst added is being of from 0.1 to 5 wt% based on the weight of oleaginous seeds, and allowing the transesterification reaction to occur for during 30 to 90 minutes at temperatures between 30 and 78°C, so as to obtain a reaction mass comprising the desired alkyl ester products at a 98-100% conversion rate;

ef) By filtration, separating the alkyl ester products, -filtering the reaction mass obtained in step e), so as to obtaining a liquid phase and a solid phase, wherein the liquid phase comprises the alkyl ester products obtained in step e);

dg) distillating From the liquid phase obtained in step f), so as to recover an excess amount of alcohol to be recycled in step c) and a remaining phase;

h) withdrawing the alcohol by distillation and decanting the remaining phase obtained in step g), so as to obtain glycerin and an the desired alkyl esters phase, wherein the alkyl esters phase comprises the alkyl ester products obtained in step e); and

ei) neutralizing the alkyl esters phase obtained in step h) so as to obtain neutralized alkyl esters recovered as biodiesel fuel. From the solid phase, drying and sieving, obtaining carbohydrate for fermentation or cattle feeding and hulls for fertilizer formulation.

2. **(currently amended):** A process according to claim 1, wherein the triglyceride-rich oleaginous seed is a sunflower, colza, soybean or peanut seed.

3. **(currently amended):** A process according to claim 1, wherein the triglyceride-rich oleaginous seed is a castor bean seed.

4. **(currently amended):** A process according to claim 1, wherein the seed to alcohol ratio in step c) is 1.5:1 to 0.5:1.

5. **(currently amended):** A process according to claim 1 wherein the catalyst added in step e) is sodium or potassium ethanoate ~~used in the~~an amount of 1.5wt% based on the weight of seed.

6. **(currently amended):** A process according to claim 1, wherein the transesterification reaction of step e) is carried out at 45-55°C during for 40-60 minutes.

7-8. **(canceled).**

9. **(currently amended):** A process according to claim 1, further comprising the following steps j)-m):

j) drying the solid phase obtained in step f) so as to recover the remaining alcohol for recycling to step c) and a dried solid phase;

k) sieving the dried solid phase obtained in step j) so as to obtain wherein the carbohydrates recovered from the solid phase are sieved to separate a course fraction and a fine fraction, wherein the fine fraction is rich in carbohydrates and has a grain size, having a granulometry of up to 20 mesh Tyler, rich in carbohydrates (89.5 wt%) that is a source of ethyl alcohol by a conventional fermentation process.

l) subjecting the fine fraction obtained in step k) to a fermentation process, so as to obtain alcohol; and

m) milling the coarse fraction obtained in step k) to a grain size of up to 20 mesh Tyler for use in fertilizers suitable for culturing the triglyceride-rich oleaginous seed used in step a).

10. **(currently amended):** A process according to claim 9, wherein the amount of ethyl alcohol obtained by the conventional fermentation process of step l) on the carbohydrates separated after the completion of the transesterification reaction is at least the amount required for performing the transesterification reaction of step e).

11-12. (canceled).

13. (currently amended): A process according to claim 1, wherein the neutralized alkyl esters obtained as biodiesel fuel in step i) are ~~reaction products are neutralized and formulated as co-solvents into~~ diesel and gasoline ~~fuels admixtures with anhydrous or hydrated ethyl alcohol.~~

14. (new): A process according to claim 1, further comprising the following steps j) and k):

- j) drying the solid phase obtained in step f) so as to recover the remaining alcohol and a solid fraction suitable for use as cattle feed; and
- k) recycling the alcohol obtained in step j) to step c).

15. (new): A process according to claim 1, wherein the anhydrous alcohol added in step c) is ethyl alcohol.

16. (new): A process according to claim 13, wherein the neutralized alkyl esters obtained as biodiesel fuel in step i) are formulated into diesel and gasoline fuels by admixture with anhydrous or hydrated ethyl alcohol.